

## MEMORANDUM

**TO:** Mayor and City Council

**THRU:** Kathleen E. Hodgson, City Manager *KEH*

**FROM:** Jay N. Hutchison, Director of Public Works *JNH*  
Kit Newland, Director of Community Resources *KN*

**DATE:** May 9, 2017

**SUBJECT:** Bear Creek Lake Park Reservoir Potential Water Storage Increase

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This memorandum provides an overview of recent information that could affect the city's management and the public's use of Bear Creek Lake Park and the process that may lead to such changes. In order to understand the potential challenges ahead, it will be helpful to have some background information.

### **BACKGROUND**

#### Bear Creek Lake Park (BCLP)

Bear Creek Dam was authorized by Congress in 1968 for flood control, recreation and fish and wildlife enhancement purposes. Bear Creek Reservoir is part of the Corps of Engineers' (Corps) "Tri-Lakes" flood control project that also includes Chatfield and Cherry Creek Reservoirs. However, unlike Chatfield and Cherry Creek, which operate as state parks, in 1982 the State of Colorado requested that the City of Lakewood assume the financial and management burdens of the park and recreation facilities at BCLP. Lakewood operates BCLP pursuant to a lease with the Corps through 2042 and a 2012 Corps' Master Plan.

Since 1982, Lakewood has successfully operated BCLP and its popularity as an outdoor respite in the middle of the City has continued to grow. Over the years, Lakewood has invested millions of dollars in BCLP and has developed the Park into a regional amenity. Annual park operating expenses are approximately \$1.3 million. A wide variety of recreational activities are available at the Park including boating, swimming, fishing, cycling, hiking, running, bird watching, picnicking, camping, horseback riding, skiing and archery. The Park also boasts large riparian and short grass prairie habitat areas, with diverse and abundant wildlife populations, including many successful raptor nesting sites. In 2016 the Park was visited by more than 484,000 people. Preliminary results of the Community Resources Master Plan public input survey identified BCLP as the most frequently used city facility with about 44% of respondents indicating they used the park in the past year.

#### Colorado Water Plan

The Colorado Water Plan was completed in 2015. It addresses long-term water needs and availability for all water uses in the state. The plan addresses the supply-demand gap including greater conservation, land-use planning changes, increasing water storage capacity, and protecting water quality

among other topics. Increasing water storage is a necessary component for short-term flows (e.g., snow melt) to be utilized throughout the rest of the year.

The plan's goal for total statewide increased water storage is 400,000 Acre Feet (AF). An acre-foot is the volume of water that would cover an acre of land one foot deep. The plan indicates potential projects have been identified that could add approximately 500,000 AF of storage recognizing that not all potential projects will be approved. One potential project to increase storage is adding 20,000 AF of storage in Bear Creek Reservoir, 5% of the total statewide goal.

## **PROPOSAL**

### **Colorado Water Conservation Board (CWCB) and U.S. Army Corps of Engineers**

The Corps owns the BCLP land, operates the dam, and leases the property to Lakewood. The Corps has apparently prepared a reconnaissance study that indicates the potential that an additional 20,000 AF of additional water could be stored in the reservoir for a variety of uses while still providing adequate flood control. To date, neither the CWCB nor the Corps has shared the report with the city.

Such additional storage would cause the typical water level in the reservoir to fluctuate significantly. The vertical fluctuation would be approximately 53'. As a comparison, the water level change experienced with the flood in 2013 was approximately 49'. Attached is an exhibit prepared by the CWCB illustrating the normal Bear Creek Reservoir water level (black boundary), the flooded areas in 2013 and 2015 (red and yellow boundaries) and the proposed water storage area (entire light blue shaded area). It is relevant to note that the water level would routinely fluctuate between current normal water level (black boundary) and the proposed water storage area (blue shaded area) as water is captured from snow melt and other precipitation and then is utilized to fulfill water needs downstream. Flood waters would be stored outside of the blue shaded area when the storage area is full and flood control is needed.

The CWCB staff has indicated that the CWCB will, during its May 2017 meeting in Pagosa Springs, - consider taking action to file in water court for the water rights necessary to accommodate an additional 20,000 AF of water storage in Bear Creek Reservoir.

### **Evaluation of Additional Water Storage at Bear Creek Reservoir**

In the early 1980's, water court applications were filed by several entities seeking to appropriate up to 20,000 acre-feet of storage in Bear Creek Reservoir for municipal purposes, based on the announcement of a potential reallocation of storage capacity by the Corps of Engineers. Subsequently, after nearly two decades of studies, expenses, and legal conflicts, which the CWCB helped to mediate, the reallocation request and water court applications were all withdrawn (except for Lakewood's 200 AF storage right for Bear Creek Reservoir for purposes within the existing permanent pool, which was approved).

As part of the efforts described above, a coalition of local Bear Creek water users, including Lakewood, Town of Morrison, Evergreen Metropolitan District, Genesee Water and Sanitation District, and others, commissioned both operational and environmental impact studies evaluating potential reallocation

storage in Bear Creek Reservoir. These studies revealed that, even when utilizing existing senior water rights already owned by the entities, there would be inadequate water to be stored, substantial inundation fluctuations of BCLP land, loss of wetlands (more than 41 acres with storage of only 4,600 AF), required dam and outlet structure modifications, and other impacts. Upon reviewing these results, the local water users concluded that the mitigation costs associated with the loss of wetlands, coupled with the Corps' capital reimbursement costs for storage, and the costs for necessary modifications to the dam and outlet structure, far outweighed the limited yield of the additional storage. Since then, the local users have implemented alternate storage projects.

### **SUMMARY**

From ColoradoWaterPlan.com:

People love Colorado. Our iconic mountains, rivers, minerals, plains, communities, forests, snow, wildlife, and wilderness have drawn people by the millions to our centennial state. Our population has ballooned from 1 million in 1930 to over 5 million today, and could nearly double by 2050. Sustaining this growth requires water. While we grow at this pace, how do we preserve what we love about our state? Colorado's Water Plan has answers.

To partially answer this challenge, the CWCB has identified a statewide need for 400,000 AF of additional water storage capacity. One potential storage project, is adding 20,000 AF of storage capacity in Bear Creek Reservoir.

Significant federal (estimated at \$2.5 million), state (estimated at \$2.5 million) and local (unknown) resources would be expended evaluating the potential for storage, identifying entities with water that are interested in utilizing the storage and paying for the impacts, identifying impacts and developing mitigation measures. Those storage-user entities would then be responsible for future costs of modifications to the dam, park and for mitigation of other impacts. Most relevant is that the potential storage has been evaluated before and found to be unfeasible by water users who, at that time, had water available that could have utilized the storage.

There are legitimate concerns with the effects to BCLP and its patrons if such a plan is implemented. The facilities and nature of BCLP would likely change; to what degree is in question. The CWCB has initiated discussions with the Corps, Lakewood and potential users of the additional storage capacity. Ultimately, if the potential for additional water storage is pursued, several evaluations will be necessary prior to a decision being made to store water. The City will be involved in all of these discussions and will advocate on behalf of Lakewood and its citizens. The impacts of such significant water fluctuations have not been fully assessed, however, we are fully aware that we will need to understand the potential for significant financial, recreational, and natural habitat effects.

### **ADDITIONAL INFORMATION**

Chatfield Reservoir Reallocation Comparison

A similar effort to make available water storage at Chatfield Reservoir occurred beginning in the mid-1990s. The following information is provided as background from a process that has likely been similar to the process that may occur regarding BCLP. It is not intended to suggest the precise process, timeline or outcome of an evaluation of BCLP.

Chatfield Reservoir is also part of the Corps’ Tri-Lakes flood control project and has the capacity to hold 350,000 AF of water. 20,600 AF of additional storage in Chatfield has been approved. The water depth will fluctuate in Chatfield approximately 12 feet due to the additional storage. The timeline for the Chatfield reallocation included:

- 1994 – Initial planning meetings
- 1996 – Initiation of the Corps’ formal study
- 1999 – Feasibility study cost share agreement signed by the Corps and CWCB
- 2004 – Public meetings to help identify goals, issues and concerns
- 2006 – Studies confirmed additional storage possible without changes to the dam or spillway
- 2012 – Draft Environmental Impact Statement released for public comment
- 2013 – Draft Final Feasibility Report released
- 2013 – Environmental Impact Statement completed
- 2014 – Approval of the Fish, Wildlife and Recreation Mitigation Plan by the CWCB and the Colorado Parks and Wildlife Commission
- 2014 – Record of Decision issued approving the reallocation

Note: According to the Chatfield Reallocation website ([ChatfieldReallocation.org](http://ChatfieldReallocation.org)), “several challenges related to federal funding, policy changes and contract negotiations led to project planning and approval process that took longer than originally anticipated.”

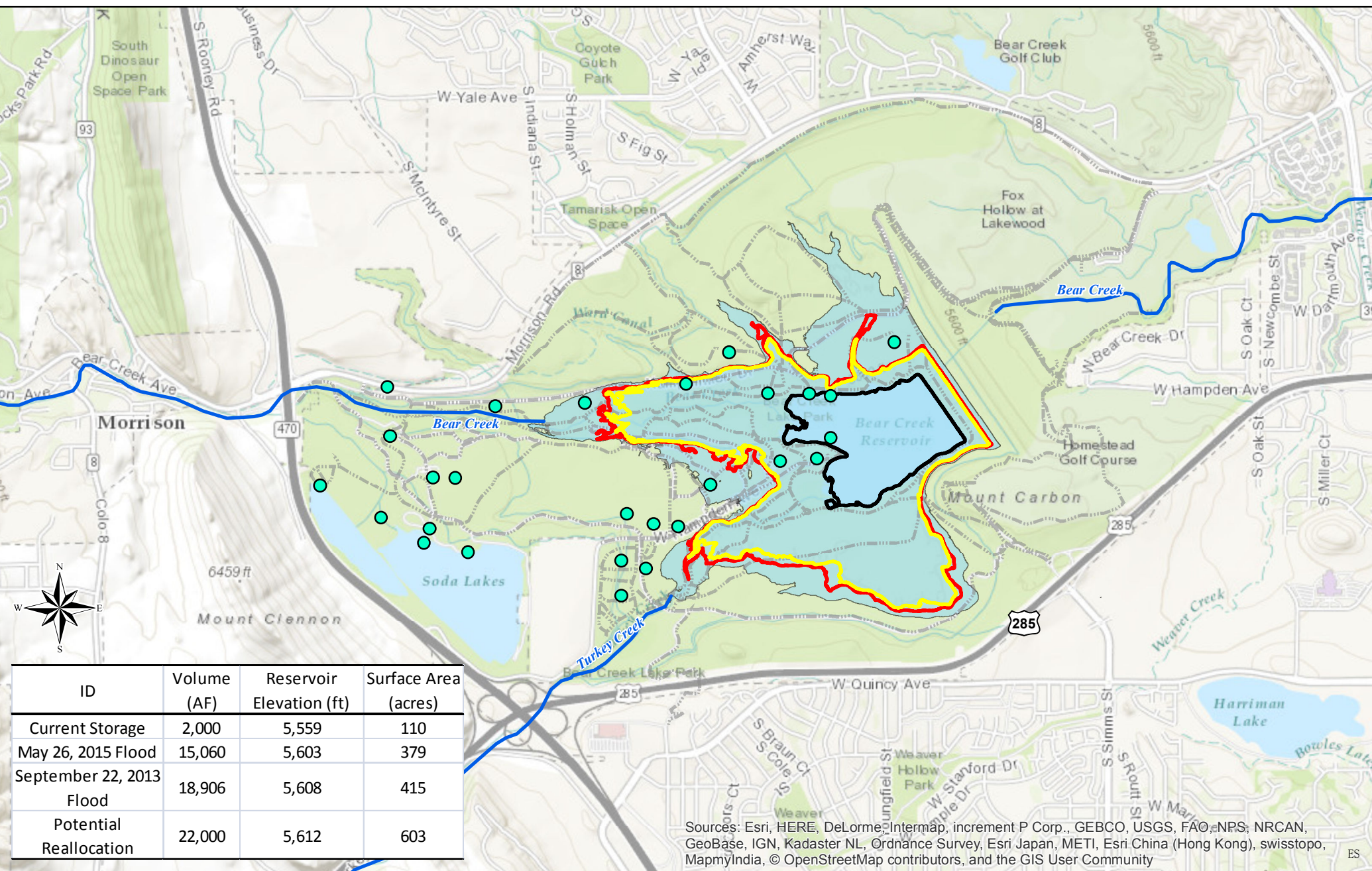
The following table compares some approximate impacts of the change in water storage at Chatfield and preliminary approximations of some impacts on BCLP.

	<b>Chatfield Reservoir</b>	<b>Bear Creek Lake Park (Excluding Golf Courses)</b>
Annual Park Visitors	1,500,000	480,000
Approximate Park Size (Acres)	5,300	1,800
Normal Water Area Before Storage Change (Acres)	1,500	110
Normal Water Area with Increased Storage (Acres)	2,100 (39% increase)	603 (450% increase)
Total Storage Capacity (AF)	350,000	77,000
Reallocation Volume (AF)	20,600 (5.9% of Total)	20,000 (26% of Total)
Vertical Water Fluctuation Attributable to Storage Change (Feet)	12	53

The 2013 flooding in BCLP increased the water surface elevation approximately 49 feet, which stored approximately 17,000 AF above the normal water area and increased the total water surface area to ~415 Acres.

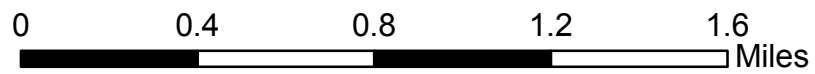


# Bear Creek Lake: Footprints of Flood Events and Potential Reallocation



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NRS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

- Current Storage
- May 26, 2015
- Sept. 22, 2013
- Potential Reallocation
- Structures
- Trails and Roads
- Stream



NAD 1983 Zone 13N  
Storage Data Provided by DWR  
Spatial Data Created by CWCB



**COLORADO**  
Colorado Water Conservation Board  
Department of Natural Resources